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September 20, 2000

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Subject: River Bend Station
Docket No. 50-458
License No. NPF-47
Licensee Event Report 50-458 / 00-012-00

File Nos. G9.5, G9.25.1.3

RBG-45497
RBF1-00-0199

Ladies and Gentlemen:

In accordance with 10CFR50.73, enclosed is the subject Licensee Event Report. There are no commitments in this document.

Sincerely,

Rick J. King

RJK/dhw
Enclosure

IE22

cc: U. S. Nuclear Regulatory Commission
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NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION
(6-1998)

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
River Bend Station	05000-458	1 of 3

TITLE (4)
Manual Reactor Scram Initiated in Response to Decreasing Main Condenser Vacuum

EVENT DATE			LER NUMBER			REPORT DATE			OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
08	21	2000	2000	012	00	09	20	2000	FACILITY NAME	DOCKET NUMBER

		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			
OPERATING MODE (9)	1	20.2201(b)	20.2203(a)(2)(v)	50.73(a)(2)(i)	50.73(a)(2)(viii)
POWER LEVEL (10)	81%	20.2203(a)(1)	20.2203(a)(3)(i)	50.73(a)(2)(ii)	50.73(a)(2)(x)
		20.2203(a)(2)(i)	20.2203(a)(3)(ii)	50.73(a)(2)(iii)	73.71
		20.2203(a)(2)(ii)	20.2203(a)(4)	X 50.73(a)(2)(iv)	OTHER
		20.2203(a)(2)(iii)	50.36(c)(1)	50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A
		20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
J. W. Leavines, Manager - Licensing	225-381-4642

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	✓	NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On August 21, 2000, at 1531 hours, with the plant operating at 81percent power, the operating crew initiated a manual reactor scram in response to a decrease in main condenser vacuum. This event is being reported in accordance with 10CFR50.73(a)(2)(iv) as a condition that resulted in the actuation of an engineered safety feature.

Before the event, the plant was operating at 100 percent power. Troubleshooting activities were in progress on the main condenser offgas system in an effort to clear a low flow alarm. Instructions in the alarm response procedure directed the initiation of an air purge of the system. When the air purge was started, the air flow rate was apparently too high, causing excessive backpressure at the discharge of the main condenser air ejector. Condenser vacuum began to decrease, and operators began reducing power in accordance with procedure. Condenser vacuum could not be recovered prior to reaching the point at which a manual reactor scram is directed by operating procedures.

Following the scram, the transient in reactor water level actuated the Level 3 setpoints, causing the actuation of an engineered safety feature in the suppression pool cooling (SPC) system. The SPC system was operating in the suppression pool cooling mode at the time. The containment isolation valves in the SPC system closed as designed. All plant responses to the scram were as expected. This event was of minimal potential consequence to the health and safety of the public.

REPORTED CONDITION

On August 21, 2000, at 1531 hours, with the plant operating at 81 percent power, the operating crew initiated a manual reactor (**RCT**) scram in response to a decrease in main condenser (**COND**) vacuum. This event is being reported in accordance with 10CFR50.73(a)(2)(iv) as a condition that resulted in the actuation of an engineered safety feature. Following the scram, the transient in reactor water level actuated the Level 3 setpoints, causing the actuation of an engineered safety feature in the suppression pool cooling (SPC) system. The SPC system was operating in the suppression pool-cooling mode at the time. The containment isolation valves in the SPC system closed as designed. All plant responses to the scram were as expected.

INVESTIGATION

In June 2000, the condenser offgas system exhibited indications of abnormal operation. System pressure began trending upward, apparently caused by an accumulation of condensate in various components. Several drain lines are installed in the system to allow continuous removal of condensate, which is a normal byproduct of steam carryover from the main condenser air ejectors (**EJR**). It is postulated that one of the drain paths became blocked, and as that section of piping is not isolable from the process stream, the blockage could not be corrected. The process stream was shifted to a redundant flowpath in an attempt to bypass the blocked drain line, but this initially perturbed flow and a return to the original flowpath was immediately accomplished. Subsequent evaluations of system parameters indicated that accumulated condensate was cleared from the system, as evidenced by differential pressures across various components and changes in the drain sump level. Following that transient, the system was re-stabilized, and although system differential pressures were substantially reduced, they were still higher than expected for the low flow rate. At this point, system conditions indicated that one cooler condenser path was functioning properly. Attention shifted to troubleshooting on one dryer. There are four dryers, three of which were functioning properly.

Following the above activities, a team was formed to pursue additional investigation of system performance. During the period between June 20 and the August 21 scram, extensive troubleshooting was performed, along with enhanced monitoring of system parameters. The troubleshooting included examination of accessible portions of the system, including piping, valves, and idle dryer skids. On July 6, the cooler condenser flow path was shifted to the redundant path attempted earlier. Although system performance improvement troubleshooting efforts were still underway, subsequent monitoring indicated a stable system condition.

On the day of the scram, operators and engineers responded to a low flow alarm using the appropriate alarm response procedure as guidance for introduction of service air into the system. When the operator opened the air purge valve in accordance with the procedure, system flow indication peaked at approximately 90 scfm. The normal flow range is 0-30 scfm. At this point, main condenser vacuum began decreasing, and the operator was instructed to close the air purge valve. The reactor operators began reducing power in accordance with the response procedure for decreasing condenser vacuum. Power was reduced from 100% to approximately 81%. When vacuum reached 24.9 inches Hg, the operators initiated a manual scram in accordance with response procedures.

Following the plant shutdown, the offgas system was opened at various points to investigate the cause of the abnormal indications. One of the system pre-filters showed evidence of moisture. Desiccant material from the offgas dryers and other material were found to be blocking the quarter-inch throat in the cooler condenser drain line isolation valves. Significant amounts of water were removed from the system.

Plant response to the scram was as expected with no abnormal system responses. Following the scram, the transient in reactor water level actuated the Level 3 setpoints, causing the actuation of an engineered safety feature in the suppression pool cooling (SPC) system. The SPC system was operating in the suppression pool cooling mode at the time. The containment isolation valves in the SPC system closed as designed. Reactor pressure and water level were maintained by normal means.

ROOT CAUSE ANALYSIS AND IMMEDIATE CORRECTIVE ACTIONS

It is believed that as a result of the reduced capacity of the offgas system and the introduction of a large volume of air, the steam jet air ejector stalled. This allowed reverse flow from the offgas system into the main condenser via the air ejector suction line. During the event, condenser vacuum was seen to decay at the rate of approximately 0.25 inches Hg/minute.

A review of the alarm response procedure found that a recent revision was not incorporated correctly. The safety evaluation for the procedure change discussed throttling of the air purge valve. No guidance was given in the revised procedure on how far to open the valve.

The reactor scram was initiated manually as directed by the response procedure for decreasing main condenser vacuum. Plant conditions were stabilized following the scram.

CORRECTIVE ACTION TO PREVENT RECURRENCE

The offgas system was opened and inspected at several locations. Material blocking condensate drain lines was removed. Repairs were made to reduce system differential pressures.

A multidisciplinary team was formed to review the events surrounding the scram, the troubleshooting plan, procedures for the low flow alarm, and the material condition of the offgas system. Further corrective actions will be taken as necessary.

PREVIOUS OCCURRENCE EVALUATION

There have been no previous plant shutdowns caused by the offgas system.

SAFETY SIGNIFICANCE

There were no unexpected equipment responses to the scram. The automatic isolation of the suppression pool cleanup system occurred as designed in response to the reactor water level transient following the scram. Reactor pressure and water level were stabilized by normal means. This event was of minimal potential consequence to the health and safety of the public.

(Note: Energy industry component identification codes are annotated in the text as (**XXX**).)